

Multi-Layer Ceramic Capacitor (MLCC) Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The global multi-layer ceramic capacitor (MLCC) market was valued at USD 11.63 billion in 2021. It is projected to reach USD 16.63 billion by 2027, registering a CAGR of 6.03% during the forecast period (2022-2027). MLCCs possess unique characteristics, including their flexibility in size and shape, low cost, and the ability to withstand high voltages. Hence, they are considered to be the most reliable ones currently. However, the most crucial characteristic that resulted in their widespread adoption was their ability to pack multiple components into a single package. Each MLCC has hundreds of layers, and each layer acts as a separate component. This eliminated the use of additional components in the circuitry.

Key Highlights

By 2030, the share of MLCCs used in base stations is expected to double. Also, the demand for MLCCs in the telecommunications sector is expected to be boosted by the deployment of 5G in developing and emerging countries. This deployment increases the utilization of 6 GHz and mmWave frequency bands and functionalities such as beamforming, driving the growth of the market studied.

The demand for automotive brands is also on the rise. MLCCs in size formats such as 0805, 0603, and 1206 are experiencing growth due to greater demand for use in combustion cars.

Similarly, there has been a shift in preference in electronics from consumer electronics to computing. The emergence of IoT, AI, cloud, and digitalization has led manufacturers to focus on this segment. These new technologies have a higher profit margin compared to consumer goods, and the units required are lesser, making it viable for manufacturers to manage their production lines.

One of the main challenges the semiconductor industry is facing is the uncertainty in regulations and associated tariffs due to the ongoing trade war between the United States and China. Both governments have imposed additional tariffs on the goods imported from the other country. Major players, like Kyocera, Samsung Electromechanical, and Murata, have their plants in these countries

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to be closer to their customers.

The supply was affected in the initial few months of 2020 when COVID-19 broke out in China. Likewise, as other countries started to initiate lockdowns, the Philippines announced on March 12, 2020, that the capital, Manila, would be on lockdown for 30 days. All sea, land, and air transportation to and from Manila were suspended, impacting the supply of MLCCs.

Multi layer Ceramic Capacitor (MLCC) Market Trends

Automotive Segment to Hold the Largest Market Share

Multilayer Ceramic Capacitors (MLCCs) are the passive components in power, safety, comfort, and entertainment systems in the automotive industry. According to Samsung, a car can contain up to 10,000 MLCCs, and a premium car can contain up to 30,000 MLCCs owing to their essential role in information transmission and IC protection. With an increasing number of car models being equipped with sophisticated arrangements, the number of MLCCs used in these vehicles is expected to increase.

The MLCCs in automobiles need to operate in harsh environments. Owing to this, the MLCCs used in the industry can withstand temperatures of 150°C or higher. With the advent of connected electronics and autonomous vehicles, the amount of data processed increases up to 100 times in Level 3 autonomous driving compared to Level 1. Furthermore, the voltage for the battery in EVs increases to 600-1000 V.

The vendors in the market are expected to focus on offering reliable products, as the life span of the MLCCs used in the industry tends to be over 15 years, even in high-temperature environments.

In April 2022, Samsung Electro-Mechanics developed high-temperature MLCCs for applications in automotive powertrains. The company developed 13 types of automotive MLCCs with guaranteed use in a 150°C environment. It also planned to supply its MLCC products to global manufacturers of automotive parts.

Modern EVs, HEVs, and PHEVs are further accelerating the demand for MLCCs. Computers now control many automotive functions to the point that traditional mechanical and pneumatic systems are almost obsolete. The proper functioning of all car electronics depends on eliminating or minimizing the effects of the electrostatic discharge (ESD) phenomenon, which can be harmful to the circuit components.

Asia-Pacific to Witness the Fastest Market Growth

China is one of the leading manufacturers of multi-layer ceramic capacitors. The Chinese market witnesses a strong presence of local companies. Moreover, the number of Chinese MLCC manufacturers has been rapidly increasing for the past few years and focusing on the supply of consumer electronic products.

In terms of end-users, China has been the world's largest automotive market for a long time and is becoming a powerhouse for automotive technologies. The country may substantially impact the automotive industry in the future since it is open to technological progress. Furthermore, with the arrival of Industry 4.0, China is expected to witness a massive growth in the automation and industry sector, owing to schemes like "Made in China 2025".

The Indian automotive industry provides a huge potential for the growth of MLCC vendors. This industry contributes more than 7% of the country's GDP. According to the IBEF, in FY 2021, the production of automobiles in India was 22.65 million vehicles. Also, 13 million vehicles were produced during April-October 2021.

Apart from the automotive industry, the consumer electronics and the telecommunication industries in India are witnessing significant growth and are expected to create a favorable market scenario for the growth of the MLCC market.

The increasing demand for MLCCs in Japan is encouraging MLCC manufacturers to expand their production facilities. For instance, in May 2022, TDK Corporation unveiled its plans to construct a new production facility on the premises of the Kitakami Factory of

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TDK Electronics Factories Corporation to enhance its MLCC production capacity. It planned to start the construction of the new building at the end of FY 2023 and complete it in June 2024.

Multi layer Ceramic Capacitor (MLCC) Market Competitor Analysis

The multi-layer ceramic capacitor market is moderately competitive and consists of some influential players. The players with significant shares in the market are concentrating on expanding their customer bases across foreign countries. They are taking strategic collaborative actions to improve their market presence and enhance their profitability.

In December 2021, Murata Manufacturing Co. Ltd manufactured the GCM31CC71C226ME36 multi-layer ceramic capacitor for automotive powertrain and safety applications. This capacitor has the highest capacitance of 22 F for MLCCs in the 1206-inch (3.2 1.6 mm) size and a 16V voltage rating.

In September 2021, Yageo Corporation extended its automotive-grade MLCC product range to reach a rated voltage of 1,000 V and enhance quality and reliability in automotive applications. The new ranges cover both class I NPO and class II X7R, starting from the case size (inch) 1206, with capacitances up to 220 pF for the NPO and 1 nF for the X7R.

Additional Benefits:

The market estimate (ME) sheet in Excel format
3 months of analyst support

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